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| 09/882,100   | 06/15/2001  | Arthur J. Carlson    | 13148US02           | 7713             |
| 23446  | 7590        | 10/17/2006           | EXAMINER            |                  |
| MCANDREWS HELD & MALLOY, LTD<br>500 WEST MADISON STREET<br>SUITE 3400<br>CHICAGO, IL 60661 |             |                      | PERILLA, JASON M    |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2611                |                  |

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/882,100

Applicant(s)

CARLSON, ARTHUR J.

Examiner

Jason M. Perilla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Claims 1-20 are pending in the instant application.

#### ***Response to Arguments***

2. The Applicant's arguments filed August 18, 2006 with respect to the prior art rejections of claims 1, 2, 4-8, and 10-12 as being unpatentable over Bremer et al (US 6546090; hereafter "Bremer") in view of Dirschedl et al (US 6262994; hereafter "Dirschedl") set forth in the office action May 17, 2006 have been considered, and they are persuasive.

The prior art rejections of claims 1, 2, 4-8, and 10-12 as being unpatentable over Bremer in view of Dirschedl are, therefore, withdrawn.

3. The Applicant's arguments with respect to the prior art rejections including Bremer in view of Dirschedl, and in further view of Gross et al (U.S. Pat. No. 6549520) have been considered, but they are not persuasive.

The Applicant notes that an error rate and a data rate are not, specifically, equivalent. However, the Applicant concedes Gross's teaching that "an error rate can have an effect on the maximum data rate that can be achieved in a system". Therefore, Gross illuminates what is already notoriously known in the art of data communication. That is, the fact that data rates and error rates are, although not strictly equivalent, art recognized functional equivalents. As previously noted, the determination of an error rate as described by Dirschedl necessitates the determination of a data rate because an "error rate" is not simply "errors" but rather *errors per unit data*. Therefore, when an

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error rate is determined, an amount of data is also determined, and it is obvious to one having skill in the art to utilize the amount of data in various methods as applied below.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable by Bremer in view of Dirschedl, and in further view of Gross et al (6,549,520; hereafter "Gross").

Regarding claim 1, Bremer discloses an ADSL system (abstract; col. 6, lines 45-55) for the transmission of high bit rate data services. Bremer does not disclose a method of restricting symbol size in an ADSL system. However, Dirschedl teaches a method of restricting symbol size in an system (abstract; col. 1, lines 40-55) comprising: obtaining information regarding the data rate during initialization (col. 2, line 63 – col. 3, line 9); comparing the information to a threshold (col. 3, lines 13-25); transmitting symbols using one of a multiple of 8, 4 or 2 bits per symbol if the information is above the threshold (col. 2, line 45); and transmitting symbols using an integer number of bits per symbol if the information is below the threshold (col. 2, line 45). Dirschedl teaches a method wherein data is gathered at the side of a receiver regarding the current bit per symbol error rate (col. 2, lines 63-68) and the data is transmitted to a transmitter of the data. A success/fail determination or threshold is compared at the transmitter to

determine the quality of the transmission (col. 3, lines 13-25). According to the success/fail determination, the number of bits per symbol is updated according to the possible bit rates of 2, 4, or 8 bits per symbol at the transmitter. As broadly as claimed, all of the possible bit rates disclosed by Dirschedl (col. 2, line 45) are both a multiple of 2 and an integer. Therefore, regardless of the decision based upon the threshold, either of the bit per symbol conditions (multiple of 2 or integer number) will be met. The method taught by Dirschedl is advantageous because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to modify the ADSL system of Bremer with the restricting symbol size method of Dirschedl because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel.

Further regarding claim 1, Bremer in view of Dirschedl do not explicitly disclose that the information regarding a data rate *is a data rate*. Furthermore, Gross teaches that information regarding a data rate (or an error rate) is a known functional equivalent to a maximum receive data rate. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute information regarding a data rate (i.e. error rate) with a data rate as suggested by Gross (col. 4, lines 29-33) because determining the corollary between an error rate and a maximum receive data rate would be within the level of ordinary skill in the art. That is, they are art recognized functional equivalents.

Regarding claim 2, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 1 as applied above. Further, Bremer in view of Dirschedl, and in further view of Gross disclose the remaining limitations of the claim as applied to the rejection of claim 2 above in view of Bremer in view of Dirschedl taken alone.

Regarding claim 3, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 1 as applied above. Further, Gross discloses that information regarding a data rate (or an error rate) is functionally equivalent to an estimated maximum receive data rate.

Regarding claims 4-6, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 1 as applied above. Further, Bremer in view of Dirschedl, and in further view of Gross disclose the remaining limitations of the claim as applied to the rejection of claims 4-6 above in view of Bremer in view of Dirschedl taken alone.

Regarding claims 7-13, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of the claims as applied to claims 1-6 above.\

Regarding claim 13, Bremer discloses an ADSL system (abstract; col. 6, lines 45-55) for the transmission of high bit rate data services. Bremer discloses a first modem (fig. 2, ref. 40) and a second modem (fig. 2, ref. 20) which each have a receiver and a transmitter as known by one having skill in the art (MODulate/DEModulate). Bremer does not disclose that the two modems achieve a maximum data rate between them. However, Dirschedl teaches a system wherein a transmitter and a receiver

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achieve a maximum data rate between them. Dirschedl teaches a transmitter which receives an error rate from a receiver which is indicative of a maximum receive data rate of a receiver and compares it to a threshold (col. 2, line 60 – col. 3, line 25) to select a number of bits per symbol based upon the comparison. In the teachings of Dirschedl, the transmitter is analogous to the second modem of Bremer and the receiver is analogous to the first modem of Bremer. Dirschedl teaches a method wherein data is gathered at the side of a receiver (first modem) regarding the current bit per symbol error rate (col. 2, lines 63-68) and the data is transmitted to a transmitter (second modem) of the data. A success/fail determination or threshold is compared at the transmitter (second modem) to determine the quality of the transmission (col. 3, lines 13-25). According to the success/fail determination, the number of bits per symbol is updated according to the possible bit rates of 2, 4, or 8 bits per symbol at the transmitter. It is at least implied that, once a new bit per symbol rate is determined by the transmitter, the receiver of Dirschedl is instructed to communicate using the selected number of bits per symbol for the utility of the communications pair. The method taught by Dirschedl is advantageous because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to modify the ADSL system of Bremer with the restricting symbol size method of Dirschedl because it can be used to provide the maximum possible bit rate according to the capacity of the communications channel.

Further regarding claim 13, the ADSL system of Bremer in view of Dirschedl discloses a transmitter which receives an error rate from a receiver but does not explicitly disclose that the error rate is an estimated maximum receive data rate. However, Gross teaches that an error rate is an art accepted equivalent to a maximum achievable data rate as applied to claim 1 above. Therefore it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize an estimated maximum receive data rate rather than an error rate for updating transmission parameters because, as taught by Gross, they are art accepted equivalents as applied to claim 1 above.

Regarding claim 14, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 13 as applied above. Further, Dirschedl discloses that the pre-selected number of bits per symbol based upon the comparison is one of 2, 4, or 8 bits per symbol (col. 2, line 45). Every one of 2, 4, and 8 is at least a multiple of 1.

Regarding claim 15, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 14 as applied above. Dirschedl discloses using a threshold or testing against a preset value to compare the information regarding the data rate (col. 3, lines 12-25). Dirschedl discloses the use of 2, 4, or 8 bits per symbol (col. 2, line 45) dependent upon the outcome of the threshold comparison and, depending upon the quality of the radio channel, bit rates from 900bits per second to 5400 bits per second (col. 3, lines 25-30). Bremer in view of Dirschedl do not disclose expressly that the threshold is 1Mbits per second or 250Kbits per second and transmitting symbols using a multiple of 8 bits per symbol if the information is above the



threshold. However, at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to utilize any one of a various number of thresholds and corresponding bit per symbol rates determined empirically. The Applicant has not disclosed that the particular claimed thresholds or corresponding bit per symbol rate provide an advantage, are used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any of a various number of threshold levels and corresponding bit per symbol rates derived empirically because each transmission system may need to be tuned according to the capacity of the communications channel and the desired data rate of the system. Therefore, it would have been obvious to one of ordinary skill in this art to modify Bremer in view of Dirschedl to obtain the invention as specified in the claim.

Regarding claim 16, Bremer in view of Dirschedl, and in further view of Gross disclose the limitation of claim 14 above. Further, the additional limitations of claim 16 are disclosed by Bremer in view of Dirschedl as applied to claim 15 above. Here, the use of a threshold of 2Mbits per second or 500Kbits per second and transmitting using a multiple of 4 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claim 17, Bremer in view of Dirschedl, and in further view of Gross disclose the limitation of claim 14 above. Further, the additional limitations of claim 17 are disclosed by Bremer in view of Dirschedl as applied to claim 15 above. Here, the use of a threshold of 3Mbits per second or 750Kbits per second and transmitting using a

multiple of 2 bits per symbol if the information is above the threshold is considered a matter of design choice as applied to claim 4 above.

Regarding claim 18, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 14 as applied above. Further, Dirschedl discloses that the transmissions errors are recorded using the CRC code (col. 2, lines 59-63) and send to the transmitter (col. 2, lines 65-68). As broadly as claimed, the number of transmission errors send by the receiver to the transmitter is considered to be a training signal.

Regarding claim 19, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 14 as applied above. Further, Dirschedl discloses that the error rate transmitted from the receiver is compared with the threshold (col. 3, lines 13-25). The error rate received from the receiver is considered to be an estimate of the maximum receive data rate of the receiver because it describes if the receiver is receiving too much or possibly too little data. The error rate, or estimated maximum receive data rate, is compared with the threshold.

Regarding claim 20, Bremer in view of Dirschedl, and in further view of Gross disclose the limitations of claim 14 as applied above. Further, it is implied in the system of Bremer in view of Dirschedl by the teachings of Dirschedl that the first modem will adjust the data rate of the transmitter according to the threshold comparison of the second modem. One skilled in the art understands that both a receiver and a transmitter must be using the same data rate and bit per symbol rate for the utility of the

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data communications. Further, it is implied that a manager or system hardware would effect the use of the correct number of bits per symbol.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason M. Perilla  
October 5, 2006

jmp



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER